

3
amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide.

24. (Amended) A method for improving functionality of a plant or animal protein and/or peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deaminate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide.

3²

25. (Amended) A method for improving functionality of food containing a plant or animal protein and/or peptide, which comprises allowing an enzyme to react with the food, wherein the enzyme has activity to deaminate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide.

Please add the following new claims:

26. (New Claim) A method for modifying a protein or a peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deaminate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is derived from a microorganism belonging to the genus *Chryseobacterium*.

3

27. (New Claim) A method for modifying a protein or a peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deaminate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and

wherein the enzyme is a polypeptide which comprises the amino acid sequence encoded by the nucleotide sequence set forth in SEQ ID NO: 5.

28. (New Claim) A method for modifying a protein or a peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is a polypeptide which comprises the amino acid sequence set forth in SEQ ID NO: 6.

29. (New Claim) A method for modifying a protein or a peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is a recombinant polypeptide which comprises an amino acid sequence encoded by a nucleotide sequence selected from the group consisting of:

(a) a polynucleotide that encodes a polypeptide which comprises the amino acid sequence set forth in SEQ ID NO: 6,

(b) a polynucleotide which comprises a nucleotide sequence set forth in SEQ ID NO: 5,

(c) a polynucleotide which hybridizes with any one of the aforementioned polynucleotides (a) and (b) under stringent conditions, and

(d) a polynucleotide which has a homology of 80% or more with any one of the aforementioned polynucleotides (a) and (b).

Claim 30. (New Claim) A method for improving functionality of a plant or animal protein and/or peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is derived from a microorganism belonging to the genus *Chryseobacterium*.

Claim 31 (New Claim) A method for improving functionality of a plant or animal protein and/or peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is a polypeptide which comprises the amino acid sequence encoded by the nucleotide sequence set forth in SEQ ID NO: 5.

Claim 32. (New Claim) A method for improving functionality of a plant or animal protein and/or peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is a polypeptide which comprises the amino acid sequence set forth in SEQ ID NO: 6.

Claim 33. (New Claim) A method for improving functionality of a plant or animal protein and/or peptide, which comprises reacting an enzyme with the protein or peptide, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or

cross-linking of the protein or peptide, and wherein the enzyme is a recombinant polypeptide which comprises an amino acid sequence encoded by a nucleotide sequence selected from the group consisting of:

- (a) a polynucleotide that encodes a polypeptide which comprises the amino acid sequence set forth in SEQ ID NO: 6,
- (b) a polynucleotide which comprises a nucleotide sequence set forth in SEQ ID NO: 5,
- (c) a polynucleotide which hybridizes with any one of the aforementioned polynucleotides (a) and (b) under stringent conditions, and
- (d) a polynucleotide which has a homology of 80% or more with any one of the aforementioned polynucleotides (a) and (b).

Claim 34. (New Claim) A method for improving functionality of food containing a plant or animal protein and/or peptide, which comprises allowing an enzyme to react with the food, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is derived from a microorganism belonging to the genus *Chryseobacterium*.

Claim 35. (New Claim) A method for improving functionality of food containing a plant or animal protein and/or peptide, which comprises allowing an enzyme to react with the food, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is a polypeptide

which comprises the amino acid sequence encoded by the nucleotide sequence set forth in SEQ ID NO: 5.

Claim 36. (New Claim) A method for improving functionality of food containing a plant or animal protein and/or peptide, which comprises allowing an enzyme to react with the food, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide, and wherein the enzyme is a polypeptide which comprises the amino acid sequence set forth in SEQ ID NO: 6.

Claim 37. (New Claim) A method for improving functionality of food containing a plant or animal protein and/or peptide, which comprises allowing an enzyme to react with the food, wherein the enzyme has activity to deamidate amido groups in the protein or the peptide by directly acting upon the groups without causing severing of peptide bonds in the protein or peptide, or cross-linking of the protein or peptide and wherein the enzyme is a recombinant polypeptide which comprises an amino acid sequence encoded by a nucleotide sequence selected from the group consisting of:

- (a) a polynucleotide that encodes a polypeptide which comprises the amino acid sequence set forth in SEQ ID NO: 6,
- (b) a polynucleotide which comprises a nucleotide sequence set forth in SEQ ID NO: 5,
- (c) a polynucleotide which hybridizes with any one of the aforementioned polynucleotides (a) and (b) under stringent conditions, and

Amendment Under 37 C.F.R. § 1.111
U.S. Serial No. 09/727,769

(d) a polynucleotide which has a homology of 80% or more with any one of the
aforementioned polynucleotides (a) and (b).
